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10/576,680

04/21/2006

Reinhard Kuhne

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BROWDY AND NEIMARK, P.L.L.C.  
624 NINTH STREET, NW  
SUITE 300  
WASHINGTON, DC 20001-5303

EXAMINER

GIARDINO JR, MARK A

ART UNIT

PAPER NUMBER

2185

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,680	<b>Applicant(s)</b> KUHNE, REINHARD	
	<b>Examiner</b> MARK A. GIARDINO JR	<b>Art Unit</b> 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 18 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

The Examiner acknowledges the applicant's submission of the amendment dated 1/18/2008. At this point claims 1-17 have been amended and claim 18 has been added. Thus, claims 1-18 are pending in the instant application.

The instant application having Application No. 10/576,680 has a total of 18 claims pending in the application, there are 2 independent claims and 16 dependent claims, all of which are ready for examination by the examiner.

**REJECTIONS BASED ON PRIOR ART**

**Claim Rejections - 35 USC ' 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. ' 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-9 and 12-18 are rejected** under 35 U.S.C. 102(LETTER) as being clearly anticipated by Estakhri et al (US 5,930,815).

**Regarding Claim 1**, Estakhri teaches a method for writing memory sectors in individually-deletable memory blocks **(the blocks are individually erasable, Column 2 Line 67)**, comprising a number of memory sectors **(Column 4 Lines 39-45)**, whereby access to the physical sectors is achieved by means of an allocation table for address conversion of a logical address into a physical block address and a physical sector

address (where the allocation table for address conversion corresponds to the table in Figures 11-21, also see how a logical block address corresponds to a physical block address on Column 11 Lines 48-63 [note that the blocks are managed by the rows 716, 718, 720, etc in Figures 11-21], and also the individual sectors are also addressed within this system, Column 16 Lines 18-32 [the sectors are addressed within these blocks by examining the least significant hexadecimal value of the address in this case of Figures 11-21]), and whereby when a sector write command is to be carried out, which relates to an already written sector, the writing takes place to an alternative memory block by means of an altered address conversion (Column 14 Lines 45-61, when LBA 0 [corresponding to the first sector of the first block] must be rewritten, a new block is found and the table is updated, this updating of the table corresponds to an altered address conversion since this block now has a new physical address), wherein the writing processes for sectors in the alternative memory block are carried out sequentially (see abstract of Estakhri, where it is specified that the sectors being written sequentially are likewise written sequentially to a given alternate block, and also see Figures 16-18 and 21, where the sequential sectors 0, 5, and 7 are written sequentially to the same alternative block [accompanying description is on Column 16 Lines 45-61 and Column 17 Lines 26-34]) and the position of the relevant sector in the alternative block is stored in the sector table (see table 714 of Figures 11-21, this table stores the positions of the sectors that have been moved to the alternative block [accompanying description is on Column 12 Lines 37-43]).

**Regarding Claim 2**, Estakhri teaches all limitations of Claim 1, wherein the altered address conversion is carried out by means of a data record with a physical block address and a sector table (the space manager chooses a physical block address, see Column 14 Lines 45-61, and the block and sector table are stored in table [data record] 700) in the internal storage of a memory controller (the space manager is in controller 506, see Column 8 Line 66 to Column 9 Line 4).

**Regarding Claim 3**, Estakhri teaches all limitations of Claim 1, wherein the sector table is organized as an index table (table 714 serves as an index table), wherein the physical sector address serves as an index (the sector address of the moved block serves as an index to the sector address of the rewritten data, see Column 16 Lines 45-61 and Figures 17-18) and the valid sector position in the alternative block is indicated at the corresponding position in the table (see Figures 17-18, where the valid sector position is indicated in table 714).

**Regarding Claim 4**, the phrase “highest possible value” is considered non-functional descriptive material and has been given no patentable weight. Estakhri teaches all limitations of Claim 3, wherein a value (the value ‘0’ in Estakhri) assigned to a sector address in the index table indicates that the corresponding sector remains unchanged in the original memory block (see Figures 17-18 and accompanying description on Column 16 Line 45-61). The value ‘0’ used in Estakhri is equivalent to the value ‘FF’ (as used in applicant’s specification) for indication purposes.

**Regarding Claim 5**, Estakhri teaches all limitations of Claim 1, wherein the sector table is organized as a search table (table 714 serves as a search table), each

table entry of which indicates the physical sector address with the corresponding valid sector position in the alternative block (the position of each entry in the table indicates the physical sector address in the alternative block and the binary value indicates the validity of such a block, see Figures 17-18 and Column 16 Lines 45-61).

**Regarding Claim 6**, Estakhri teaches all limitations of Claim 5, wherein the search table is sorted by physical sector addresses (table 714 is sorted such that as one moves from left to right on Figures 17-18, the physical sector address increases).

**Regarding Claim 7**, Estakhri teaches all limitations of Claim 1, wherein the position of the sector within the alternative block is also stored in the administrative part of the sector (table 714 stores the position of the moved sector within the alternative block, and each entry of table 714 is also an administrative part of the corresponding sector).

**Regarding Claim 8**, Estakhri teaches all limitations of Claim 7, wherein the sector table of a block is reconstructed from the sector positions stored in the administrative part when the memory system is restarted (table 714 which contains the sector tables of the blocks is stored in RAM, see Column 11 Lines 36-47, and this RAM is continually shadowed and restored on power up, see Column 10 Line 66 to Column 11 Line 15).

**Regarding Claim 9**, Estakhri teaches all limitations of Claim 8, wherein when restarting, the sector positions are registered in the sector table (table 714 which includes the sector positions in the sector table is stored in RAM, see Column 11 Lines

36-47, and this RAM is continually shadowed and restored on power up, see Column 10 Line 66 to Column 11 Line 15).

**Regarding Claim 12**, Estakhri teaches all limitations of Claim 1, wherein, as soon as the sector table is filled (according to a user defined threshold, Column 17 Lines 39-41), a new alternative block is searched for, to which the valid sectors from the original memory block, together with those from the previous alternative block, are then copied (Column 17 Lines 42-49).

**Regarding Claim 13**, Estakhri teaches all limitations of Claim 12, wherein the new alternative block is registered in the allocation table as the original memory block and the previous memory and alternative blocks are cleared for deletion (Column 17 Lines 52-54).

**Regarding Claim 14**, Estakhri teaches the method according to Claim 1, wherein in the allocation table, a strategy indicator is carried along with each logical block address, indicating whether a search table, marked as "sector mask", or an index table, marked as "sector table", have last been used for this logical block address (since Estakhri's table of Figures 11-21 fall under applicant's definition of index table and search table in claims 3 and 5 respectively above, and Estakhri inherently has an indicator for indicating how the data is stored in the table).

**Regarding Claim 15**, Estakhri teaches the method according to Claim 14, wherein the strategy indicator is initialised with "sector mask" (since Estakhri teaches a sector table and index table as the same table, it is inherent that the indicator is initialized with a sector mask).

**Regarding Claim 16**, Estakhri teaches the method according to Claim 14, wherein if the memory system is formatted as a FAT file system, the memory blocks are initialised with "sector table" (since Estakhri teaches a sector table and index table as the same table, it is inherent that the indicator is initialized with a sector table).

**Regarding Claim 17**, Estakhri teaches the method according to Claim 14, wherein if only a few sectors have been written to the alternative block system, and one of these blocks is to be rewritten, the administration of the alternative block is switched from "sector mask" to "sector table" (since Estakhri teaches a sector table and index table as the same table, it is inherent that any switch could be made during the rewriting of the alternative block).

**Regarding Claim 18**, Estakhri teaches a method for writing memory sectors in individually-deletable memory blocks (the blocks are individually erasable, Column 2 Line 67), comprising a number of memory sectors (Column 4 Lines 39-45), whereby access to the physical sectors is achieved by means of an allocation table for address conversion of a logical address into a physical block address and a physical sector address (where the allocation table for address conversion corresponds to the table in Figures 11-21, also see how blocks are addressed on Column 11 Lines 48-63, where the logical to physical address translation is explained, and also note how the individual sectors are addressed within this system, Column 16 Lines 18-21), the method comprising:

writing data to an alternative memory block by means of an altered address conversion when a sector write command is to be carried out to an already written



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sector (Column 14 Lines 45-61, when LBA 0 must be rewritten, a new block is found and the table is updated, this updating of the table corresponds to an altered address conversion), wherein the step of writing for sectors in the alternative memory block are carried out sequentially (see abstract of Estakhri, where it is specified that the sectors being written sequentially are likewise written sequentially to a given alternate block, and also see Figures 16-18 and 21, where the sequential sectors 0, 5, and 7 are written to the same alternative block [accompanying description is on Column 16 Lines 45-61 and Column 17 Lines 26-34]); and

storing the position of the relevant sector in the alternative block in a sector table (see table 714 of Figures 11-21, this table stores the positions of the sectors that have been moved to the alternative block [accompanying description is on Column 12 Lines 37-43]).

### **Claim Rejections - 35 USC ' 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Estakhri in view of Asnaashari (US 5,928,370).

**Regarding Claims 10 and 11**, Estakhri meets all limitations of Claims 3 and 5 as discussed above. However, Estakhri does not teach a memory block containing 256

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sectors or index and search tables having 32 bytes. Asnaashari teaches a flash device that contains a sector size of 256 bytes (Column 3 Lines 14-21 in Asnaashari). Since Estakhri teaches one bit per sector in his index and search table, the size of each table for such a sector size is 256 bits, or 32 bytes. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have used a sector size of 256 bytes. As motivation, Estakhri teaches 16 sectors in a block, but clearly states that other block sizes may be employed (Column 12 Lines 9-13 in Estakhri), and since 256 was a well known sector size in the art, one of ordinary skill would have found it obvious to use such a sector size. Also, limitations relating to size are not sufficient to distinguish over prior art, see MPEP 2144.04 (IV) A.

## **ARGUMENTS CONCERNING NON-PRIOR ART REJECTIONS/OBJECTIONS**

### **Specification Objections**

Applicant's arguments/amendments with respect to the specification have been considered and have overcome the Examiner's prior objections and thus are withdrawn.

### **Rejections - USC 112**

Applicant's arguments/amendments with respect to claims 9 and 14-17 have been considered and have overcome the Examiner's prior rejections and thus are withdrawn.

## **ARGUMENTS CONCERNING PRIOR ART REJECTIONS**

**Rejections - USC 102/103**

In response to applicant's argument that Estakhri does not handle the individual writing of sectors, it has been considered but is not persuasive. Note Column 11 Lines 23-34, where one (or more) sectors may be moved from one location in the flash memory to another, and during the move, the sector is inherently written to another section of the flash memory. Therefore, Estakhri teaches the individual writing of sectors.

In response to applicant's argument that the references fail to show selection of the next physical block, it is noted that this feature is not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Claim 1 recites "the writing takes place to an alternative memory block" with no mention of where the alternative memory block must be.

In response to applicant's argument that Estakhri does not teach different tables for address translation between logical and physical blocks and for the management of writing sectors, it has been considered but is not persuasive. The limitation that these tables be separate is not included in the claims. Further, there is no reason that the tables of Figure 11-21 in Estakhri must be thought of as one large table. The allocation table for address conversion of a logical address into a physical block address is the table comprising the VPBA, MVPBA, and flag columns (also see accompanying description on Column 11 Lines 48-63), and the position of the relevant sector in the

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alternative block is stored in the table comprising Columns 714, since it stores the positions of the sectors that have been moved to the alternative block (Column 12 Lines 37-43).

In response to applicant's argument that Asnaashari does not speak about tables, the examiner did not rely on Asnaashari for that particular teaching. Estakhri specifically teaches that the sectors may have different sizes (Column 12 Lines 9-13 in Estakhri), and the examiner was using Asnaashari to show that 256 sectors in a block would have been obvious to a person having ordinary skill in the art at the time the invention was made, and that a block of this size would correspond to an index table of 32 bytes. Further, applicant has not responded to the assertion that limitations relating to size are not sufficient to distinguish over prior art, see MPEP 2144.04 (IV) A.

Applicant's arguments with respect to claims 14-15 and 17 have been considered but are moot in view of the new ground(s) of rejection.

## **CLOSING COMMENTS**

### **Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **STATUS OF CLAIMS IN THE APPLICATION**

#### **CLAIMS REJECTED IN THE APPLICATION**

Per the instant office action, claims 1-18 have received a second action on the merits and are subject of a second action final.

#### **DIRECTION OF FUTURE CORRESPONDENCES**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Anthony Giardino whose telephone number is (571) 270-3565 and can normally be reached on Monday - Thursday 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Sanjiv Shah can be reached on (571) 272 - 4098. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.A. Giardino

/M.G./

Patent Examiner  
Art Unit 2185

April 2, 2008

/Sanjiv Shah/  
Supervisory Patent Examiner, Art Unit 2185